

**Notice of Allowability**

Application No.

10/715,870

Applicant(s)

BORSHUKOV, GEORGE

Examiner

Enrique L. Santiago

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to November 17, 2003.
2. ☒ The allowed claim(s) is/are 1-17.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 10-4-04
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
RICHARD HJERPESUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600

## DETAILED ACTION

### Allowable Subject Matter

Claims 1-17 are allowed.

The following is an examiner's statement of reasons for allowance:

Claims 1-17 are allowed, because the prior art alone or in combination among other limitations does not teach or suggest to one of ordinary skill in the art *"digitally rendering a material using BRDF data"* by *"accessing a database of BRDF data, the BRDF data comprising measured BRDF values for a sample material; processing the BRDF data to define estimated BRDF values over a regular grid corresponding to light rays, the light rays being of a type selected from incident rays or reflected rays; and recording the estimated BRDF values in a data table for input to a shading algorithm, whereby the shading algorithm is enabled to shade modeled surfaces of the material by interpolating BRDF values for modeled light rays from the estimated BRDF values in the data table corresponding to adjacent light rays, the adjacent light rays being of a type matching the modeled light rays."* The closest prior art Kouadio, US patent no. 6,765,573 B2, teaches a surface shading method that computes and stores light reflectance values as a texture map for a given light direction and a view direction to an object in a scene during development of a computer graphics program and using the stored texture map for shading during real-time rendering, however said prior art fails to teach the previously stated limitations contained in the applicants claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

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fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### **Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US patent no. 6,810,130 B1: US patent no. 6,765,573 B2: US patent no. 6,750,873 B1: US patent no. 6,694,064 B1: US patent no. 6,097,394: US patent no. 5,745,759

US Patent Application Pub. No. 2005/0140673 A1: US Patent Application Pub. No. 2004/0100465 A1: US Patent Application Pub. No. 2004/0061700 A1: US Patent Application Pub. No. 2003/0234786 A1: US Patent Application Pub. No. 2003/0227457 A1: US Patent Application Pub. No. 2003/0011596 A1: US Patent Application Pub. No. 2003/0030639 A1

Article "Monte Carlo Methods and the Challenge of Photo-Realism in Computer Graphics" by Steven Collins (Image Synthesis Group, Trinity College Dublin), pages 1-21, Proceedings of the 1998 Hitachi Symposium, 1998.

Article "Statistical Approaches to Material Classification", by Manik Varma and Andrew Zisserman, pages 1-6, Proceedings of the Indian Conference on Computer Vision 2002.

Article "Illumination and Reflection Maps: Simulated Objects in Simulated and Real Environments" by Gene S. Miller and C. Robert Hoffman, pages 1-12, Course Notes for Advanced Computer Graphics, SIGGRAPH 84, July 23, 1984.

Article "Measuring and Modeling Anisotropic Reflection" by Gregory J. Ward, International Conference on Computer Graphics and Interactive Techniques Proceedings of the

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19th annual conference on Computer graphics and interactive techniques, Pages: 265–272, 1992, ISSN:0097-8930.

Article “Adaptive Radiosity Textures for Bidirectional Ray Tracing” by Paul S. Heckbert, pages 145-154, Computer Graphics, Volume 24, Number 4, August 1990.

Article “Generalization of Lambert’s Reflectance Model” by Michael Oren and Shree K. Nayar, Department of Computer Science, Columbia University New York, pages 1-15, NEW YORK ASSOCIATION FOR COMPUTING, 1994.

Article “Reflectance and Texture of Real-World Surfaces” by Kristin J. Dana, Bram van Ginneken, Shree K. Nayar, Jan J. Koenderink, pages 1-34, ACM Transactions on Graphics, Volume 18, No. 1, January 1999.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Enrique L Santiago whose telephone number is (571) 272-7648. The examiner can normally be reached on Monday to Friday from 7:00 A.M. to 3:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard A. Hjerpe whose telephone number is (571) 272-7691, can be reached on Monday to Friday from 7:00 A.M. to 3:30 P.M.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

Faxed to: 571-273-8300

Hand carried deliveries must be made to the Customer Service Window (now located at the Randolph Building, 401 Dulany Street, Alexandria, VA 22314)

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Enrique L. Santiago

February 27, 2006



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